

What is claimed is:

1. A waste toner device for an image forming apparatus comprising:

a cartridge having an auger and a port, the auger rotates to move toner towards the port, the cartridge further comprising a cartridge door positionable
5 between a closed orientation extending across the port to prevent the toner from escaping, and an open orientation to allow the toner to move through the port;

a toner chute having an inlet with a chute door positionable between opened and closed orientations to control the movement of the toner through the inlet; and

10 an actuator positioned adjacent to the toner chute and positionable in first and second orientations, the first orientation being in contact with the chute door to position the chute door in the open orientation, and the second orientation in contact with the cartridge door to position the cartridge door in the open orientation.

15 2. The device of claim 1, wherein the auger is aligned substantially perpendicular to the toner chute.

20 3. The device of claim 1, wherein the cartridge further comprises a photoconductive member and a blade to remove the toner from the photoconductive member and move the toner into the auger.

25 4. The device of claim 1, further comprising a handle operatively connected to the cartridge door that is positioned within a catch in the actuator, the handle being contacted by the actuator when moving between the first and second orientations to move the cartridge door between the closed orientation and the open orientation.

30 5. The device of claim 1, further comprising a biasing mechanism to bias the cartridge door towards the closed orientation.

6. The device of claim 1, wherein the actuator comprises a first actuator to contact the chute door and a second actuator to contact the cartridge door.

7. The device of claim 1, wherein the toner chute further comprises an auger to
5 move the toner towards an end of the toner chute.

8. The device of claim 7, wherein the toner chute and the auger are vertically positioned such that gravity assists in moving the toner towards the end of the waste toner chute.

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9. The device of claim 8, further comprising a waste toner tank positioned at the end of the waste toner chute to collect the toner, the waste toner tank being removable from the image forming apparatus.

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10. The device of claim 1, further comprising a flexible flap having a first end attached to the toner chute adjacent to the inlet and a second end that extends into a path of the auger to flex downward and rebound to prevent the toner from clogging within the waste toner chute.

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11. The device of claim 1, further comprising an extension that extends outward from the chute door to contact the actuator in the first orientation to position the chute door in the open orientation.

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12. The device of claim 1, wherein the actuator is vertically positioned to extend along a section of the toner chute and be attached to a frame of the image forming device.

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13. The device of claim 12, wherein the actuator is operatively connected to a cover with movement of the cover positioning the actuator between the first and second orientations.

14. A waste toner removal device for an image forming apparatus comprising:
a cover movably mounted on the device and positionable between open
and closed orientations;

a toner chute positioned within the device and having an inlet;

5 a cartridge mounted to the toner chute and having an auger that moves
toner from a photoconductive member towards a port having a port door; and

an actuator mounted on the device and operatively connected to the cover
and to the port door, the actuator positioned in a first position when the cover is
in the open orientation with the port door being across the port to prevent toner
10 from moving through the inlet, the actuator positioned in a second position when
the cover is in the closed orientation to contact and position the port door away
from the port to allow toner to move through the inlet.

15 15. The device of claim 14, further comprising a chute door adjacent to the inlet
and sized to cover the inlet in a closed position and prevent toner from moving
through the inlet when the cartridge is removed.

16 The device of claim 15, wherein the cartridge contacts the chute door when
installed in the image forming apparatus to maintain the chute door in an open
20 position.

17. The device of 14, further comprising a cam positioned between the cover
and the actuator to transform rotational motion of the cover to linear motion of the
actuator.

25 18. The device of 17, further comprising a pivoting link positioned between the
cover and the cam, the pivoting link having a connecting point that moves from a
first side of the cam when the cover is in an open position to a second side of the
cam when the cover is in a closed position.

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19. A waste toner removal device for an image forming apparatus comprising:

a waste toner chute;

a first inlet within the waste toner chute having a first door;

a second inlet within the waste toner chute having a second door;

5 a cartridge having an auger, a waste toner port, and a cartridge door, the cartridge mounted to the waste toner chute with a waste toner port aligned with the first inlet and the cartridge positioned to maintain the first door in an open orientation away from the first inlet;

10 an actuator adjacent to the waste toner chute and positionable in a first position to maintain the second door in an open orientation away from the second inlet, and a second position to move the second door to a closed orientation across the second inlet and to open the cartridge door for toner to move along the auger and through the waste toner port and the first inlet.

15 20. The device of claim 19, further comprising a cover that is operatively connected to the actuator with movement of the cover causing the actuator to move between the first and second positions.

20 21. The device of claim 19, wherein the first inlet is vertically above the second inlet.

22. The device of claim 21, further comprising a waste toner tank at a bottom end of the toner chute vertically below the first inlet and the second inlet.

23. A method of removing toner from an image forming device, the method comprising the steps of:

moving a cover to an open position and opening an inlet in a waste toner chute;

5 mounting a cartridge within the image forming device with a waste toner port of the cartridge aligning with the inlet of the waste toner chute;

moving the cover to a closed position and moving a door positioned across the waste toner port on the cartridge to an open position; and

10 moving waste toner along the cartridge and through the waste toner port on the cartridge and through the inlet into the waste toner chute.

24. The method of claim 23, wherein the step of moving the cover to the closed position moves an actuator positioned along the waste toner chute to contact and move the door to the open position.

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25. The method of claim 23, wherein the step of moving the waste toner along the cartridge and through the waste toner port comprises positioning a blade in the cartridge against a photoconductive member in the cartridge and directing the waste toner with an auger within the cartridge.

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26. The method of claim 23, further comprising rotating an auger within the waste toner chute and moving toner away from the waste toner port.

27. The method of claim 26, further comprising positioning a flap between the inlet of the waste toner chute and the auger to contact the auger and periodically flex and release to prevent the waste toner from clogging within the waste toner chute.

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28. The method of claim 23, further comprising removing a waste toner tank from the waste toner chute to remove the waste toner from the image forming device.

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29. The method of claim 28, further comprising positioning a shutter across the waste toner chute when removing the waste toner tank.

5 30. A method of removing waste toner from an image forming device, the method comprising the steps of:

mounting a first cartridge to the image forming device with a port of the first cartridge aligned with a first inlet on a waste toner chute;

10 removing a second cartridge from the image forming device and away from a second inlet on the waste toner chute;

closing a cover on the image forming device and moving a door on the first cartridge from a closed orientation to an open orientation and closing a toner chute door at the second inlet; and

15 moving waste toner through the port of the first cartridge and through the first inlet and into the waste toner chute.

31. The method of claim 30, further comprising sealing a connection between the port of the first cartridge with the first inlet on the waste toner chute.